

hesitate to  
take this  
it this is it

(U) 8/9/91

Code Practice

→  
e e e e  
I II i iii  
ssis sss  
is  
... b b b b  
she his she  
— t  
— m m m me mise  
mist  
— o o o oh ohio  
exponent  
— n n no not nine n  
a a a  
at ~~sit~~ ate  
name  
Train  
 davon was es nicht  
kriege  
one na  
dots = numbers

line counts number

(2)

do date  
data  
in all  
use unit  
arited

list to monad u.  
201928 3746

know enough for code test  
period counts as I have  
The train is not at the  
station.

The name is Tom and I'm in Tennessee,  
Mississippi.

test will be one of these two sentences.  
will not violate integrity by telling  
which sentence  
~~it won't be anything we haven't received today~~  
~~now will test~~  
Charlie will give code test

the name is Tom and I am  
in Tennessee.

2:30pm - Some of class already here & reviewing  
Bending of signals like on 2 meters = tropo (for troposphere)  
travel over 500 miles increases distance - by way of ducting  
Bends of waves - caused by (sand)

? equipment

watt meter or SWR meter for most accurate  
horizontal antenna tuner or transmitter antenna pack  
best or most.  
2 of these are on test

multimeter - volts, current & resistance

? What is a multimeter?

? SWR meter same as +

? is what does a directional watt meter  
reads forward and reflected power

100W forward  
10 back = 90

96 w f 4 watts reflect = 92

that is minimum voltage lethal to human?  
30V (they actually use more dangerous  
in test " Sand )

who sets standards - ANSI

(Amer Natl Stds ~~Stand~~) they do

what does ANSI set

sets RF exposure limits

In wiring up power supply where does  
black + red wire go - fuse

In tuning or adjusting transmittal filter (2)  
devise — Dummy load

Electrical components

1 capacitor - stores energy  
rated in farads - stored in farads  
capacitor has 2 plates

2 What is material between 2 plates that  
~~allows capacitor to store energy?~~  
~~⑥ Dielectric material ferrite~~

4 how is capacitor usually rated -  
microfarads & volts

Andy looking at all three tests - wanted  
Charlie to clarify. Charlie said this & last  
test in front of her.)  
what is micro farad  $10^{-6}$ .

What is the law - ohms (missed part of  
what he said.)

Andy - Under that question need to  
understand it is understand  $10^{-6}$  that  
is kg (minus is kg in test?)

what does inductor do  
coil - stores and opposes current change  
what does resistor do?

Resists  
What is 4th band on a resistor  
tolerance

Sandy - "Ohm is basic unit of  
resistance & the 4th band indicate  
tolerance in %"  
③

nodes of communication

(new student arrived - took quick break here)  
will be doing a new handout. Will try to get it to  
each of us in a week

Modes of com

CW - morse code = A / A

Telegraphy - Amplitude

CW = switch " carries off & on

Sandy - "Amplitude modulation is used"  
switches strength off & on

morse code designated ITU

? In ITU, what does the first letter designation  
mean - A = type of emission used

International Telecomm. Union - not needed for  
test

~~F~~ Freqvers  
~~M~~ Modulation  
similar to P<sup>pass</sup>M modulator

J3E = single sideband

Charlie thinks this is all we need to know

Antennas -

Vertical - they are electric lines of force  
There is something on my word test that says magneti-wrong - play word  
Lines of force perpendicular to surface

Balun - matches coax to ~~antenna~~  
~~(is feed)~~ to feed line ⑨

Yagi - type of beam line  
~~regarding~~ - Sandy -  
Parallel Parasitic Element

has a director & driver element feeds  
1/2 wave length

Sandy - read ans. to one of question

"1/2 wave length driver elements  
with parasitically parallel elements"

balanced  
Anten - some as symmetrical centered about  
the feed point - not at ground sout ) -

Coax connect 2 anten - balanced &  
symmetrical Sandy

Sandy - "just got tests last night just  
reviewed"

How do you minimize radio freq exposure  
- mount or point close to ground - Sandy  
said mount

M - reactance modulator -

If react. mod. fails -

You'll have unmodulated carrier (waves) Sandy

this - let me give this to you my young son of  
Sandy : what freq. are attenuated  
by a low pass filter - "will not let  
anything above cut off freq bass"  
(5)

~~Ed~~ Sandy : "what circuit attenuates electrical  
energy & send below a certain frequency? - Band  
Will attenuate above & below" -  
Pass

~~Ed~~ Sandy - there is a couple  
Yagi is 2 or more tubes physically arranged  
parallel to each other

VHF is direct wave & vhf or ground wave

HF is three sky wave

F1 & F2 2 distinct subwaves

Farber - "Sandy, keep all three tests there  
& make note on anything I miss" - statement  
Control Operator first - control point  
3rd party - unlicensed person operat - can  
own much power - minimum FCC  
signal report -

5 perfect

7 moderately okay

8 repeater - FCC says - pause briefly  
between transmission

1st response  
1st comm from disaster - tactical  
who may declare state of comm. ~~disaster~~  
emergencies?

FCC when disaster disrupts communications  
temporary KT - If someone has novice  
license, passed their Tech, CSSE, may  
operate tech per, if they sign temporary  
after call sign

internal 3rd party traffic - must identify  
after each exchange of communication

Tech can operate anywhere above 50 m  
therefore - remember all ~~for~~ 4 of

(Sandy - said "remember - no novices")  
Tech - general advanced - extra

'46.52 - all but novices

remote control ~~to~~ TX do not have to identify  
provided - no ~~to~~ address & call sign  
affixed to TX

Amateurs may retransmit ~~to~~ radio  
broadcasts from Space shuttle - as long as  
approved by NASA

repeaters have offset - input - receive  
output - TX

Input / output diff  
6 meters = 1 MHz

2 meters = 0.6 MHz  
 $\frac{1}{4}$  meter = 1600 kHz

①

Is same as taught before - they just are  
playing games ~~as~~ with decimal

Stretch break - "So Sandy - what happened?"

A ^ someone complained about the code. ~~I think~~ or  
thought it might be a guy who wrote a bad  
check. He's the only one who did it call about the  
letter. ~~Tom~~ were told it was a woman. Someone  
saw the letter & ~~the~~ a woman wrote complaining  
about the code saying it wasn't 3 words a minute.  
How could anyone tell? Next time, when they start morse,  
will actually have a class and use certified tape. Be  
about 2 weeks. Pink person is someone who is upset at being not  
being allowed to participate in school. Is someone on 435?

Propagation - ~~well~~

<sup>VHF + UHF</sup>  
one phenomenon that causes air waves to bend =  
tropo

that is layer 2 layers by day & 1 at night = F  
2 distinct sublayers of day = F

what is lowest layer used for prop = E

Densest layer to absorb - D (sand = D is most dense)

Best Best place to place SWR meter or watt meter  
for best reading - at antenna term or jock

multimeter = volt, current, resistance

another name = SWR - direct watt meter  
reads forward & reflected power

Volts consider dangerous - 30 V

ANSI sets min RF exposure limits

(1)

(8)

- When working with power supply  
black or red wire connected to fuse

When tuning overadjust a TX filter device  
dummy load

capacitor - store energy

rated in farads = micro farads & volts  
stored

ferrite material between 2 plates of capacitor is  
what - dielectric material

volt is law showing math relationship

showing math rel betw volts, ohm, amps =  
ohms law

inductor is a coil - stores and opposes  
current to changes

band pass filter = attenuate above & below  
bw pass

low pass = attenuate above a freq

1st band of resistor - tolerance in %  
nodes

CW or Morse code - telegraph - turns

Amplitude modulated CXP off & on - 1st bit

ITU covers types of emmiss or modulator  
used = as A = amplitude

key words vertical = electric lines of force  
& perpendicular

balun = device matches coax to (feed line) to  
antenna

odd simo  
odd phase  
 $FM = PM$  odd

②

Reactance modulator <sup>makes</sup> causes FM - causes freq to change - If reactance mod blows - FM tx fails - unmod exp wave

Yagi - parasitic - parallel "sandy" (covers 1 guest pool guest)"

2 or more parallel tubes main balanced antenna - symmetrical at feed point

2 min radio freq exposure - mount et ground

micro farad =  $10^{-6}$

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### novice review

Amateur = self training

Part 97 - covers all but construct static studs

If another person comes over & is lic - they are control operator - If one does something wrong (visitor) - both

US call signs = KANTW =

AA2Z = US

CE = Foreign

FCC reg. = current mailing address  
- for correspondence

bonds dog  
for sale  
5 months  
female will have  
weaned

Rep of foreign Govt - co

(C) 2

3rd party trf = can communicate foreign  
country 3rd party agree

limit access to TX = Key op off + on switch

SD = 10" fat end

novice - entry

tech - above

No basins

Basins = Immediate safety

5 principles of radio - 5 fundamental principles

Emerg commun

Advantage of radio

Improve. comm

Increase training

Int'l good will

Received complaint of TVI - first must  $\checkmark$  TV

- Put low pass filter <sup>TXR</sup> - put on TV = high pass

current = 2 direct = AC

if " " = DC

rated in amps

Voltage = equiv to water pressure water pipe

Unit of resistance = ohms

math relat volt, current ohm = ohms law

propagation ionosphere = sky wave

" on ground = ground wave or direct

$\sqrt{HF \times VHF}$  is ground wave or direct

freq to band conv = 300  
222.1 =  $1\frac{1}{4}$   
28 mhz = 10 mtrs

Novice priv = 80 mtrs  
 $3700 - 3750 = \underline{\text{CW}}$   
15 mtrs  $21.1 - 21.2 = \underline{\text{CW}}$   
28 mhz  $\frac{28.1 - 28.5}{\text{or } 10 \text{ mtrs}} \text{ cw + voids}$

antennas - 222.1 - 223.91 - all modes

proper length to freq tx on

4 for  $\frac{1}{2}$  wave antenna  $468/\text{freq}$   
 $\frac{1}{4}$  " "  $234/\text{freq}$

10 meter  $\frac{1}{2}$  wave  $= 16$  feet

10 "  $\frac{1}{4}$  "  $= 8$  feet

Keep antenna away from face -

SWR = measures standing waves  
or direct watt meter

X apart (removing shielding from tx) we  
must make certain tx can't be accidentally  
energized

harmonics = mult thereof 2nd

4th  
Harmonic.  $160 \times 4 =$

signals all random - called parasitic or  
spurious signals

signals generated at random = parasite (12)

How can we eliminate parasite in power

TX = by neutralizing

Voice varies freq back & forth = FM

meg to kilo - 3 right

W or morse code = chirp can be corrected by better output voltage regulator

F signals above 20,000 become lertz become radio signals

AGC = radiates signals / direct - some as beam

Vert = all direct  
dipole - 2 direct

Smallest element yagi = smallest director

will give diagram - in section C

Driven element  $\frac{1}{2}$  wave length

000 ohms match to 50 ohm - impedance matching device or balun

Why use  $\frac{5}{8}$  wave or  $\frac{1}{4}$  wave = more gain

Talk SSB or voice - use mix

w = key

computer - keyboard

7.1 common mode  
reviewed - handout 3

(13)

Topics reviewed

mater - self train

at 97 all except str const

seats str control op

ma lic = authority to operate a str

in lic = call sign

A22 = US

4

7

T

W

current mail by E convolution

no opn = res forward goes

intal = 3rd pty agreement

QSO = conversati

-R = end of msg

-Q = general call

-TH = location

init access - key opn off/on

id = every 10 "

at end QSO

nty level - novis

abn tech

no freqs

(10)

missed 3-4 quest di-rected  
current 2 direct AC  
1 direct DC  
voltage - water pressure  
current rated amps  
resistor " ohms

Ionsphere =

sky wave

- UHF VHF = ground or d

freq to band = 300

28 = 10 innd

21 = 15

nt

$468/\lambda = 1/2 \text{ waves}/\lambda$

$234/\lambda = 1/4 \text{ wave}$

$1/2 \text{ for } 10 \text{ & } 16$

$1/4 \text{ ft } 10 = 8 \text{ ft}$

burn = away from face

meter measure forward reflected SWR  
or direct with a

ing scattered at random = parasitic or

10% in mind by neutralization spurs

harmonics = mult (15)

2nd  $\times 2$

3rd  $\times 3$

voiced mouth back

+ foot = fm

Chirp = prevented by  
better output voltage  
regulator

signals above what  
~~too~~ become radio

20000

Beam - gyro - 1 direct  
smallest - director sect

driven by  $1\frac{1}{2}$  waves  
length

Device 1000 = 50  
match - impedance

voiced - mks

CW = Hz

compt keyboard

~~Metastable states~~ (16)

Scan

Distress = Cw do  
anything to make  
contact

Grounding the equis  
- lightning storm -  
ground

Conductors & insulators

- insulator - glass  
glass

air

porcelain

plastics

- conductor - good

gold

alum

silver

flat

mike to transco,

SWR - Ant SW -

antenna

wavy line - reso

with diodes var resist

arrow to grid - ⑯  
ground

constellate - double  
pole, double throw

1 min break

Tech - "Stand - all you  
still say?"  
where is  
control op located at  
control point  
3rd party = as long  
as control op at control  
point  
use man power - per  
FCC

read S report - only quest  
5 perfect  
7 moderate.

FCC - use repeat -  
pause ~~for~~ between  
transmis

FCC - declare state  
of emerg when disast  
disrupt normal  
commun

first trns from  
disast - tactical  
temporary KT

2nd 3rd parties -  
after each exchange  
of transmission

7 trns 52.5  
tech  
genl  
adv  
sptra

anything 50 mhz  
remote control = no ID  
no addr, callsign  
affixed

Ariando may reboard  
space shuttle by  
permis of NASA

Rpts  
receive input  
transmit output  
i/o = 52 mhz - 1 mhz  
6 mhz

145<sup>nd</sup>  
2 meters  
0.6 mhz

(19)

$$222.1 = 1600 \text{ KHz}$$

What causes VHF to  
bend - Tropo

lowest layer prop -  
E layer

2 layers 2 days 1 site =  
 $F$

lowest dense - D dense  
day

best read SWR or  
watt  
ant term or ant  
jack

multimeter = VCR

dried watt = feed  
& reflected sur

min volt consid

danger = 30V

determined by

ANSI

where do black (20)  
or red - fuse

tunis = dummy

capac - stores energy  
basic anti farad  
micro farad 10<sup>-6</sup>

dis electric

capac rated  
micro farad  
+ volt

ohms - VCR  
inductor stores +  
opposes chg

band pass - pass  
attenuate outside  
below

high pass passes hi  
attenuate lo

low pass

resistor = resists

4th band - tolerance  
in %

(21)

CW = AM - mouse  
ATA = ITU  
Tels

Vert ant = electric  
waves travel  
perp to earth  
surface

What device matches  
beam

yagi - parallel +  
parallel  $\frac{1}{2}$  wave  
length

balanced ant at  
feed point -  
sym

RF - keep ant near  
FM sim to phase  
mod  
if rear mod fails  
unmodulate CTR  
wave

(22)

waves  
entre opn at control pt  
3rd party unlic - critl  
opn at control pt

FCC - control

Rptr = FCC = pause brief  
between trns

1 stress disas - tactics  
state of emerg - FCC  
disaster - disaster  
com

novice - await tech  
call sign - temp & T

Int'l 3rd common - ID  
after evn trns

52.5 - T

G

A

E

146.5<

Remote control -  
no add'l call

Amo opn - may  
rebroadcast = Space Shuttle  
perm of NASA

(23)

Repeater

input 1 mhz 6mΩ  
out 52mΩ

146, 2 2 mΩ  
0.6dB/mhz

222.1 1/4 = 1600 kHz

VHF - signals to bend  
tropo

layer of ions -

retards D

lowest temp E

2 to 1 F

best or most accurate  
ant term or ant read with  
F jack

multimeter

VCR

direct wattmeter  
forward & reflect

(24)

min V danger =

30V

ANSI - RF

exp limits

black & red - fuse

dummy load

capacitor

micro

dielectric

band pass -

loss

pass

induct - stored

oppose

4th band tolerance  
in %

(25)

ITU =  
Vert - electric dipole  
perpendicular  
to earth  
balun - matches

FM = PM

yagi parasit  
Parabolic

min  
RF = ant at ground  
~~VE assis - no paper work~~  
VE 5 = not assot 8/24/91

School

Tom Takemany

reserved sketch

317 6815 orig  
sched in  
Mar Vista

if paper work lost  
contact tom - give  
na loca date

(26)

once we take  
exam, sent by  
Tom to Texas  
W5YI

If we see guest we  
recog, it's because  
charlie teaches from  
same pool exam  
given from.

Sandy passed out  
610 & ans form

VE's didn't bring  
tests. Sandy had  
all 3 tests, Tom  
to select which test

On 610

Put location as Mar Vista  
not Marina Del Rey  
- class held at Sandy's

(27) No code tests will be given. Brought a no code tech test team.

Sandy requested photo id (D.C.) looked at pict. said it was me & people - same last name - don't know each other. Tom questioned to see if they should be separated from sitting next to each other.

8 year old Beebe Tom got Dr Beebe's mother Sandy - how many young packages New J.D. left for lunch get ready now D6UW To Bob Bob & Mike Bryant with NEMSO

(28) Will handle rest of test - Tom will do paper work first Tom passed out exam sheets below - Sandy took mine 21-4 mostly unanswered exam passed out. See p. 2A

Tom asked Sandy about it saying he never sees the exams & they're generated by computer. Sandy went to package & got diagrams.

Sandy passed out tech tests and 3 tech exams to those seated below & to me at table Tom not in room at start of TEC trial and 410

(29)

When Tom asked  
me if there were  
3 sets of exams,  
Sandy got an  
envelope & started  
to open it. Tom  
told her to give it  
to one of the VEs (Bob).  
(Not, when I couldn't  
find one of the diagrs.  
Tom asked Sandy  
about it and Sandy  
said it was in one  
of the pkgs. She went  
& got it. Mike handed  
it to me.

Sandy came by to  
be sure I had entered  
series test on tops, &  
noticed I mentioned  
that I had a

(30)

different test from  
everyone else  
(out load).

During my tech 400  
exam, Mike said -  
"Where's Tom?"

Sandy "I don't  
know"

About 10" later  
Tom came down  
from upper  
level. 4' ID

Bob suggested  
was only VE  
checking exams.

After my novice  
was graded

(31)

they gave it &  
610 back (missed 2)  
when ~~they~~ <sup>Bob</sup> finished  
grading my Tech  
(upstairs) Sandy  
brought the test  
back (I missed 2).

Only those intending  
to take code in  
next 210 weeks  
could get certificate.  
Had to be done in  
red so they couldn't  
be forged.

For the young boy,  
James, Sandy  
graded the novice. He  
failed. (he missed  
3 more than

(32)

allowed) Sandy  
was in the process  
of reading James  
questions for his  
second test when  
I left. At the  
beginning of the  
exam session,  
Sandy said "We'd  
better check it's  
a drivers license  
will be good we  
need to see a picture."  
I got my D. L. out.  
Sandy looked & told  
Tom it was ok.  
All the V.E.'s arrived  
without anything  
in hand. Test pkg  
already there,